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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/672,493	09/29/2000	Pallab Dutta-Choudhury	PM 271374	2629

23459 7590 09/12/2003

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EXAMINER

CARTER, AARON W

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 09/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/672,493

Applicant(s)

DUTTA-CHOUDHURY ET AL.

Examiner

Aaron W Carter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-12 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,640,200 to Michael.

3. As to claims 1, 7, and 8, Michael discloses a method of training an object visual inspection system, the method comprising:

Specifying an alignment region (column 2, lines 6-15, wherein a single fiducial mark corresponds to an alignment region and column 12, lines 52-54);

Specifying an alignment region with a plurality of inspection regions (column 1, lines 52-60, wherein the GTC may consist of a collection of regions corresponding to inspection regions);

Associating each of the plurality of inspection regions with at least one inspection tool (column 15, lines 5-9 and column 16, lines 15-18, wherein photometrics, geometrical measurements and gray-scale mathematical morphology correspond to inspection tools); and

Performing training for each of the plurality of inspection regions for each of the associated inspection tools (column 14, lines 43-46).

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4. As to claim 2, Michael discloses the method of claim 1, wherein performing training for the at least one inspection tool requires performing statistical training with reference to a plurality of training images (column 14, lines 42-46).

5. As to claims 3 and 9, Michael discloses the method of claim 1, wherein training for each of the plurality of inspection regions is performed in any order (column 14, lines 3-8).

6. As to claims 4 and 10, Michael discloses the method of claim 1, wherein associating each of the plurality of inspection regions with at least one inspection tool associates at least one of the plurality of inspection regions with a first inspection tool that is different from a second inspection tool associated with another one the plurality of inspection regions (column 15, lines 46-53, wherein a threshold corresponds to an inspection tool and can be made different for selected regions, also columns 15, line 55 – column 16, line 2, wherein intensity variation in some applications maybe combined with defect shape analysis, both corresponding to different inspection tools, wherein applications corresponds to different inspection regions).

7. As to claims 5 and 11, Michael discloses the method of claim 4, wherein training for the first inspection tool is performed simultaneously with training for the second inspection tool (column 16, lines 45-47, wherein intensity and shape are analysis simultaneously in the same equation).

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8. As to claims 6 and 12, Michael discloses the method of claim 4, wherein training for the first inspection tool is performed either before or after training for the second inspection tool (column 15, lines 55-58, wherein intensity variation is found and then shape of a pixel region is determined).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 13-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,668,874 to Kristol et al. ("Kristol") in view of Michael (already of record).

11. As to claim 13, Kristol discloses a visual inspection system comprising:

A machine vision system coupled to a camera (fig. 2, element 210), the machine vision system including:

A display that displays the acquired image-data (fig. 2, element 222);

A processor coupled to the display via a bus (fig. 2, element 220);

A memory buffer coupled to the display and the processor via the bus (fig. 2, element 220, it is inherent that the computer contains a memory buffer);

A visual data acquisition system interface coupled to the display, processor and memory buffer via the bus and to the camera (fig. 2, element 210);

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A user interface coupled to the display, processor memory buffer and visual data acquisition system via the bus (fig. 2, element 222);

A controller coupled to and controlling cooperation of the display, the processor, the memory buffer, the visual data acquisition system interface and the user interface via the bus (fig. 2, element 220),

Wherein, under the direction of the controller, the processor fetches instructions from the memory buffer that direct the controller to control the visual data acquisition system interface (column 5, lines 41-44), user interface and processor to specify an alignment region (fig. 1E, element 40), associate the alignment region with a plurality of inspection regions (fig. 1E, elements 30, 50, and 51), and associating each of the plurality of inspection regions with at least one inspection tool (Abstract, lines 7-10).

Kristol is silent about performing training for each of the plurality of inspection regions for each of the associated inspection tools. However, Michael discloses performing training for each of a plurality of inspection regions using multiple inspection tools (column 14, lines 43-46). Michael also discloses associating a single alignment region with a plurality of inspection regions (column 2, lines 6-15, wherein a single fiducial mark corresponds to an alignment region and column 12, lines 52-54). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the inspection system as disclosed by Kristol with the training technique disclosed by Michael in order to create an ideal reference image for use during inspection of 2-D images that do not suffer from geometric distortions (Michael, column 45-48).

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12. As to claim 14, Kristol disclose a visual inspection system comprising:

A camera that acquires image-data including a digital representation of objects (column 5, lines 30-38);

And

The machine vision system as recited in claim 13 is coupled to the camera (fig. 2, elements 210 and 220).

13. As to claim 15, refer to the rejection made for claim 2 above.

As to claim 16, refer to the rejection made for claim 4 above.

As to claim 17, refer to the rejection made for claim 5 above.

As to claim 18, refer to the rejection made for claims 1 and 13 above.

As to claim 19, refer to the rejection made for claims 1 and 13 above.

14. As to claim 20, Michael discloses wherein the trained image-data includes template image-data (column 9, lines 43-45).

15. As to claim 21, Michael discloses wherein the trained image-data includes standard deviation image-data (column 10, lines 17-20).

16. As to claim 22, refer to the rejection made for claim 2 above.

17. As to claim 23, Kristol and Michael disclose that the at least one inspection tool is one of an intensity difference inspection tool, feature difference inspection tool or blank scene inspection tool (Kristol, Abstract, lines 7-10) and (Michael, column 15, lines 5-9 and column 16, lines 15-18, wherein photometrics, geometrical measurements and gray-scale mathematical morphology correspond to inspection tools).

### ***Conclusion***

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 5,689,620 to Kopec et al. discloses great motivation for training and creating a reference image.

US Patent 4,794,648 to Ayata et al. discloses an alignment procedure.

US Patent 6,035,072 to Read discloses training and blank space inspection.

US Patent 6,240,208 to Garakani et al. discloses training.

US Patent 6,366,688 to Jun et al. discloses the use of a single alignment region associated with multiple inspection regions.

US Patent 5,949,905 to Nichani et al. discloses similar features.

### ***Contact Information***

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron W. Carter whose telephone number is 703.306.4060. The examiner can normally be reached by telephone between 8am - 4:30pm (Mon. – Fri.).



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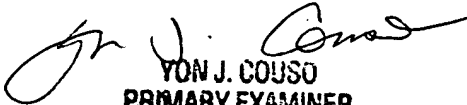
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 703.308.5246. The fax phone number for the organization where the application or proceeding is assigned is 703.872.9306 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703.306.0377.

Aaron W. Carter  
Examiner  
Art Unit 2625

*Awc*  
awc

September 3, 2003

  
YON J. COUSO  
PRIMARY EXAMINER